

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

Claim 1 (Original): A microarray cartridge, comprising:
a body having a wall forming a cavity surrounded by a mating surface, the cavity including a reaction chamber and at least one microarray support dimensioned to support a microarray slide within the cavity such that the slide covers the reaction chamber;
and
a cover configured to cover the cavity and sealingly adhere with the mating surface of said body by non-removable adhering means.

Claim 2 (Original): The microarray cartridge of claim 1, wherein the non-removable adhering means comprises a heat seal between said cover and the mating surface of said body.

Claim 3 (Original): The microarray cartridge of claim 1, wherein the non-removable adhering means comprises a non-removable adhesive seal between said cover and the mating surface of said body.

Claim 4 (Original): The microarray cartridge of claim 1, wherein the non-removable adhering means does not include a mechanical fastener.

Claim 5 (Original): The microarray cartridge of claim 1, comprising a plurality of microarray supports within the cavity for positioning the microarray slide.

Claim 6 (Original): The microarray cartridge of claim 1, wherein the cartridge further comprises a first access site communicating with the reaction chamber for passing fluids from a delivery device and into the reaction chamber.

Claim 7 (Original): The microarray cartridge of claim 6, wherein the first access site is located on said body, wherein the access site is dimensioned to pass fluids from a fluid delivery device through the body wall and into the reaction chamber.

Claim 8 (Original): The microarray cartridge of claim 6, wherein the body further comprises a first dimple feature in communication with the reaction chamber and the first access site, the first dimple feature forming a passage for a fluid around a first edge of the microarray slide and into the reaction chamber when the microarray slide is placed in the cavity.

Claim 9 (Original): The microarray cartridge of claim 8, wherein the first access site is located on said body and communicates with said dimple feature, such that fluid from the fluid delivery device passes through the body wall and into the dimple feature.

Claim 10 (Original): The microarray cartridge of claim 8, wherein the first access site is located on said cover and communicates with said dimple feature, such that fluid from the fluid delivery device passes through the cover and into the dimple feature.

Claim 11 (Original): The microarray cartridge of claim 10, wherein the first access site is an open port and the fluid delivery device is a pipette dimensioned to deliver fluids through the port.

Claim 12 (Original): The microarray cartridge of claim 10, wherein the first access site has a thickness of between 0.003 and 0.015 inches, and the fluid delivery device is a needle for piercing through the access site and delivering fluids into the first dimple feature.

Claim 13 (Original): The microarray cartridge of claim 8, wherein said body further comprises a second dimple feature in communication with the reaction chamber, the second dimple feature forming a passage for fluids around a second edge of the microarray slide and into the reaction chamber when the microarray slide is placed in the cavity.

Claim 14 (Original): The microarray cartridge of claim 13, wherein said cartridge further includes a second access site communicating with the second dimple feature for passing fluids into or out of the reaction chamber.

Claim 15 (Original): The microarray cartridge of claim 6, wherein the first access site is an open end of the cartridge, said cartridge further comprising a flange feature at the open end to facilitate entry of a fluid delivery device through the first access site before sealingly cohering said cover to said body at the open end.

Claim 16 (Original): The microarray cartridge of claim 15, wherein the flange feature comprises a first flange attached to and extending from an edge of said body at the access site and a second flange attached to and extending from a corresponding edge of said cover, such that the first and second flanges facilitate passage of the fluid delivery device through the open end of the cartridge between the body and the cover.

Claim 17 (Original): The microarray cartridge of claim 1, wherein the body is thermoformed and the body wall has a thickness of less than 0.065 inch.

Claim 18 (Original): The microarray cartridge of claim 17, wherein the thickness is between 0.005 and 0.025 inch.

Claim 19 (Original): The microarray cartridge of claim 18, wherein the thickness is between .010 and .015 inch.

Claim 20 (Original): The microarray cartridge of claim 1, wherein the body is injection molded and the body wall has a thickness of less than 0.1 inch.

Claim 21 (Original): The microarray cartridge of claim 21, wherein the thickness is between 0.032 and 0.075 inch.

Claim 22 (Original): The microarray cartridge of claim 22, wherein the thickness is between 0.040 and 0.060 inches.

Claim 23 (Original): The microarray cartridge of claim 1, wherein the body includes a plurality of cavities, each of the plurality of cavities having a corresponding reaction chamber and at least one corresponding microarray support for supporting a microarray slide.

Claim 24 (Original): The microarray cartridge of claim 24, wherein the plurality of cavities comprises at least four cavities.

Claim 25 (Original): The microarray cartridge of claim 1, wherein reaction chamber has a volume of at least 500 μL .

Claim 26 (Original): The microarray cartridge of claim 25, wherein the volume is at least 1 mL.

Claim 27 (Original): The microarray cartridge of claim 26, wherein the volume is 1 mL to 3 mL.

Claim 28 (Original): The microarray cartridge of claim 1, wherein the body further includes a plurality of obstacles within the reaction chamber arranged to affect motion of fluid within the chamber.

Claim 29 (Original): The microarray cartridge of claim 28, wherein the obstacles are attached to a surface of the reaction chamber opposite the microarray.

Claim 30 (Original): The microarray cartridge of claim 1, further comprising a snap feature to hold said cover over said cavity before sealingly adhering said cover to said mating surface

Claim 31 (Original): The microarray cartridge of claim 30, further comprising a microarray slide positioned within the cavity of said body and supported by the microarray support such that a surface of said microarray slide covers the reaction chamber.

Claim 32 (Original): The microarray cartridge of claim 1 wherein the microarray slide comprises an array of nucleic acid probes distributed on the surface of a glass substrate, and wherein the microarray slide is positioned such that the probes are in communication with a fluid in the reaction chamber.

Claim 33 (Original): The microarray cartridge of claim 32, wherein the fluid includes nucleic acid molecules under conditions conducive to hybridization between the nucleic acid molecules and the nucleic acid probes on the microarray.

Claim 34 (Original): A microarray cartridge, comprising:
a cavity for holding a microarray slide, said cavity including a reaction chamber and a microarray support structure dimensioned to support a microarray slide within the cavity such that the slide covers the reaction chamber when the slide is placed within the

cavity;

a mating surface surrounding said cavity; and

a cover contiguously extending from an edge of said mating surface, said cover configured to hingably cover said cavity and sealingly adhere to said mating surface.

Claim 35 (Original): The microarray cartridge of claim 34, further comprising a snap feature to hold said cover over said cavity before sealingly adhering said cover to said mating surface.

Claim 36 (Original): The microarray cartridge of claim 35, further comprising:
an adhering seal between the cover and the mating surface surrounding the cavity; and

the microarray slide sealed within the cavity, wherein the microarray slide comprises an array of biological probes distributed on a surface of the slide, and wherein the microarray slide is positioned in the cavity such that the probes are in communication with a fluid in the reaction chamber.

Claim 37 (Original): The microarray cartridge of claim 36, wherein the adhering seal is a heat seal.

Claim 38 (Original): The microarray cartridge of claim 34, further comprising an access site for introducing fluids into the reaction chamber when said cover covers said cavity.

Claim 39 (Original): The microarray cartridge of claim 36, wherein the access site comprises an open end of the cartridge between the cover and the mating surface, said cartridge further comprising:

a first flange attached to and extending from an edge of said mating surface at the open end of the cartridge; and

a second flange attached to and extending from a corresponding edge of said cover, such that the first and second flanges facilitate entry of a fluid delivery device between said cover and said mating surface at the open end of the cartridge when said cover covers said cavity.

Claim 40 (Original): The microarray cartridge of claim 34, further comprising a plurality of said cavities separated by said mating surface, wherein said cover covers and seals said plurality of cavities when said cover sealingly adheres to said mating surface.

Claim 41 (Original): The microarray cartridge of claim 34, further comprising a catch feature to facilitate manipulation of the cartridge during a high-throughput processing.

Claim 42 (Original): The microarray cartridge of claim 41, wherein the catch feature comprises a notch or a raised portion on at least one edge of said cartridge.

Claims 43 - 68 (Canceled)

Claim 69 (New): The microarray cartridge of claim 1, wherein said cover contiguously extends from an edge of the mating surface and is configured to hingably cover the cavity and sealingly adhere with the mating surface of said body.

Claim 70 (New): The microarray cartridge of claim 69, further comprising a snap feature on the mating surface of said body to engage and hold said cover over the cavity before sealingly adhering said cover to the mating surface.